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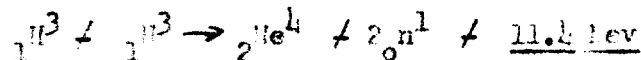
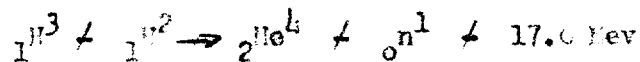
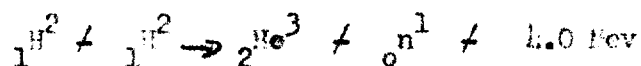
April 12, 1954

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SUMMARY OF UNCLASSIFIED CALCULATIONS ON THE DETONATION OF COBALT-60
IN FUSION DEVICES

1. Assuming the production of one neutron per 10 mev of energy release*, a 1-megaton bomb would produce 2.5×10^{27} neutrons.
2. If every neutron were to be captured by a Co^{59} nucleus, it would require 2.5×10^5 grams (about 550 lbs.) of Co^{59} or a volume of one cubic foot.
3. In view of the low cross section of Co^{59} and the attenuation of Co^{59} as a result of the explosion, it is assumed that less than 0.1% of the neutrons released would be absorbed in Co^{59} .
4. If one arbitrarily selects 0.1% as the percentage of neutrons produced that will react with a Co^{59} nucleus, a 1-megaton fusion device would produce 2.7×10^5 curies of Co^{60} . Assuming that 25% of this activity fell out in 5,000 square miles around ground zero, the initial dose rate from Co^{60} would be about 0.15 mr/hr. This would be insignificant compared to the radiation dose rate from the fission products from a nuclear weapon for many months after detonation.

* Some possible reactions are:



AVERAGE 9.76 Mev

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